Mechanisms of Tardive Dyskinesia: 3-Question Quiz

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Which genes have recently been associated with TD? That question and more in this quiz.

Question 1:Poll Software | Survey Software Answer and Question #2 on Next Page »

The correct answer is B.
Discussion
There is evidence for the utility of rodent, transgenic mouse, and non-human primate models in the pathophysiology of tardive dyskinesia (TD).¹ Rodents administered (sub)chronic antipsychotics develop robust, seemingly purposely, chewing activity, referred to as vacuous chewing movements. Transgenic mice have been used to study the impact of knockout of specific genes on adverse motor effects of antipsychotic exposure.² Lastly, long-term antipsychotic treatment in non-human primates is associated with stereotypic abnormal movements similar to those found in humans.³

Question 2:Poll Software | Survey Software Answer and Question #3 on Next Page »

The correct answer is D.
Discussion
There is some evidence supporting each of these three theories in the pathophysiology of TD.⁴ The “dopamine receptor hypersensitivity hypothesis” posits that chronic dopamine D2 receptor blockade by antipsychotics results in upregulation/increase in D2 receptor synthesis, with resulting increased sensitivity to dopamine in nigrostriatal pathways.

Another theory holds that dysfunction of striatal GABAergic neurons controlling motor function underlies TD.⁵ The “oxidative stress” hypothesis suggests that antipsychotics are associated with increased production of reactive oxygen species/free radicals (i.e., oxidative stress). This overwhelms endogenous antioxidant defenses, culminating in neurodegeneration of striatal interneurons.

Question 3:Poll Software | Survey Software Answer on Next Page »

The correct answer is A.
Discussion
All of the above genes have recently been associated with TD, but only HSPG2 has replicated evidence in GWAS, including in patients from Australia, Japan, Israel, and Caucasian Americans. Other candidates with evidence for association with TD include polymorphisms in drug metabolism (e.g., cytochrome P450), dopamine, serotonin, GABA, and glutamate genes.⁶-⁸

References:


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